DOCUMENT RESUME

ED 412 290 TM 027 824

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TITLE	Enhancing the Quality and Use of Student Outcomes Data. Final Report of the National Postsecondary Education Cooperative Working Group on Student Outcomes from a Data Perspective.
INSTITUTION	National Postsecondary Education Cooperative.
SPONS AGENCY	National Center for Education Statistics (ED), Washington, DC.
REPORT NO	NCES-97-992
PUB DATE	1997-00-00
NOTE	50p.
PUB TYPE	Reports - Evaluative (142)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Academic Achievement; Cooperation; Data Analysis; *Data Collection; Educational Research; *Evaluation Utilization; *Information Dissemination; *Outcomes of Education; *Postsecondary Education; Research Needs; Research Utilization; State Programs; Student Evaluation

ABSTRACT

The National Postsecondary Education Cooperative has sponsored two working groups on student outcomes, one exploring the issue from a policy perspective and the other, from a data perspective. This report presents the results of the data perspective case studies, discusses the strengths and weaknesses of the "state of the art" in student outcomes data, and provides Working Group recommendations for enhancing the quality, breadth, and usefulness of outcomes data. The first section provides background information about student outcomes and the role of the Working Group. Section II describes the goals, methodology, and results of the case studies in Texas and Virginia, and discusses current student outcomes data. Section III presents the Working Groups recommendations. The first recommendation is that the quality and scope of student outcomes data must be expanded by linking various sources of data. The second recommendation is that the concept of reciprocity must underlie database development, analysis, use, and dissemination. Another important direction for the future will be to expand the operational definition of postsecondary student and thereby extend the student databases. In-depth work is needed on definitions overall, and guidelines must be developed to help states and other organizations use databases appropriately. A follow-up project should be implemented to integrate the work of the data perspective and educational policy Working Groups. (Contains 3 tables and 12 references.) (SLD)

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Enhancing the Quality and Use of Student Outcomes Data

Final Report of the National Postsecondary Education Cooperative Working Group on Student Outcomes From a Data Perspective

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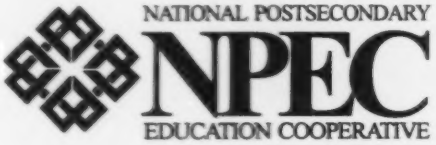

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Enhancing the Quality and Use of Student Outcomes Data

Final Report of the National Postsecondary Education Cooperative Working Group on Student Outcomes From a Data Perspective

Prepared by the Council of the National Postsecondary Education Cooperative (NPEC) and its Working Group on Student Outcomes from a Data Perspective by Maryann J. Gray, Behavioral Scientist, RAND, Santa Monica, California and Judy D. Grace, Associate Director, Center for the Study of Higher Education, The Pennsylvania State University, University Park, PA under the sponsorship of the National Center for Education Statistics (NCES), U.S. Department of Education.

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Suggested Citation

U.S. Department of Education. National Center for Education Statistics. *Enhancing the Quality and Use of Student Outcomes Data*, NCES 97–992, prepared by Maryann J. Gray and Judy D. Grace for the Council of the National Postsecondary Education Cooperative Working Group on Student Outcomes from a Data Perspective. Washington, DC 1997.

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ENHANCING THE QUALITY AND USE OF STUDENT OUTCOMES DATA

I. Introduction and Background

During the past year, the National Postsecondary Education Cooperative (NPEC) has sponsored two Working Groups on student outcomes, one exploring this area from a policy perspective, the other examining it from a data perspective. The goals of the "Student Outcomes from a Data Perspective" Working Group are to: (1) determine how different audiences think about students and outcomes of different kinds of education and training programs; (2) document data sources and analyze the data collected and maintained to answer questions about student outcomes including identification of gaps in the current data sources; (3) describe the purpose and effectiveness of current data collection in developing sound policy; and (4) explain how technology advances are affecting the way student data are coordinated and disseminated and how the advances will affect future practices and policies.[1]

The Working Group has used two inter-related strategies to achieve its goals. First, the Working Group consultants conducted case studies of student outcomes data collection in Texas and Virginia. The case studies provided descriptive information about student outcomes data at the state level and established the foundation for discussion and analysis of the trade-offs, benefits, and disadvantages of various approaches to student outcomes data collection, analysis, and dissemination. Second, two Working Group meetings have provided opportunities for participants to share their experiences and knowledge and to move toward consensus in identifying priority concerns and developing recommendations. These discussions have been informed by the case studies and the professional literature on assessment and student outcomes.

This report presents results of the case studies, discusses the strengths and weaknesses of the current "state of the art," and provides Working Group recommendations for enhancing the quality, breadth, and usefulness of outcomes data. This section provides background information about student outcomes and the role of the Working Group. Section II describes the goals, methodology, and results of the case studies, and also discusses the strengths and weaknesses of current student outcomes data based on the case study findings and Working Group discussions. Finally, Section III presents the Working

[1]To date, the Working Group has focused primarily on the first three goals.

Group's recommendations. Although this report focuses on the accomplishments of the Student Outcomes from a Data Perspective Working Group, the analyses and recommendations extend and complement those of the Student Outcomes from a Policy Perspective Working Group.

There is no single generally accepted definition of "student outcomes." In fact, the definition of "student outcome" must be contextually-based. Data that represent an "outcome" in one context may represent a predictor in another. For purposes of this paper, the universe of "student outcomes data" is captured in the outcomes taxonomy developed by the NPEC Working Group on Student Outcomes from a Policy Perspective (Terenzini, 1996). Appendix A displays this taxonomy. Our focus is on the outcomes of postsecondary education, or formal training and education beyond the high school level. Postsecondary education as used here refers to training offered by institutions, including proprietary schools, colleges and universities, business and industry, and the military.

Challenges of Student Outcomes Assessment

Although postsecondary institutions and systems have collected, analyzed, and reported student outcomes information for years, the policy significance of student outcomes has increased substantially over the past ten to fifteen years. Outcomes data originally were collected to address research questions about the effects of postsecondary education on students' lives (for example, Feldman and Newcomb, 1969). In the 1980s, outcomes data received new attention from policymakers as a means of motivating and evaluating efforts to improve undergraduate education. Fully 23 states established some type of assessment initiative during this time (Ewell, 1995).

More recently, however, outcomes data have been used to evaluate the productivity and performance of postsecondary institutions and systems. Rapidly rising costs of postsecondary education coupled with widespread concern that the nation's workforce lacks the skills needed to maintain our nation's economic competitiveness have stimulated questions about both the effectiveness and efficiency of the sector. Information about student outcomes carries the potential to respond to many of these questions. Thus, although the policy and fiscal context of postsecondary education is changing, the demand for outcomes data continues. Over three quarters of the states now require information about student outcomes or institutional performance (Ewell, 1996; Keller, 1996). Among the purposes that outcomes data are expected to serve are:

- Providing evidence of institutional effectiveness to policymakers, accreditation associations, and consumers;
- Addressing emerging questions about returns on investment in postsecondary education for individuals and families, states, and the nation at large;
- Providing information to guide local, state, and national postsecondary policy;
- Informing institutional planning, program development, and program improvement in an era of constrained resources;
- Responding to employer concerns about whether postsecondary institutions are adequately preparing students for the workplace; and
- Providing information to individuals and families to help them reach informed decisions about postsecondary institutions and programs of study.

Nonetheless, outcomes information to date is limited in its ability to meet these needs. The technical challenges associated with assessing student outcomes are significant and range from the difficulty of developing valid and reliable measures of higher order cognitive skills to the problems of inferring causality from correlational data. Assessing student outcomes is also a political process, and challenges in this domain include the problems of imposing "unfunded mandates" on systems or institutions, campus resistance due to perceived links between assessment and downsizing or cost-cutting, and the range of interpretations available for any set of observed outcomes (Steele and Lutz, 1995). Disagreement among educators and policymakers about the purposes and goals of higher education further stymie efforts assessment efforts, especially in a policy context. As a result of these challenges, a number of observers have pointed out that existing student outcomes data systems are unable to answer basic questions about what students learn in college and whether they possess the skills and abilities needed by the labor market (Terenzini, 1996).

Yet another challenge to using outcomes information to measure institutional performance is the substantial variation in available data across institutions and systems. For example, only seven states use common assessment measures to measure student learning, and each state's common measure has little in common with others (Karelis, 1996). Three states--Florida, Texas, and Georgia--maintain competency testing programs, and four others--Tennessee, Wisconsin, South Dakota, and Arkansas--test all students or samples of students in at least one general education skill area. Most states require or encourage institutions to develop their own outcomes measures (Ewell, 1995). The proliferation of outcomes

measures is observed within as well as between campuses--An ACT survey found that only one third of institutions reported common measures and most of these were placement exams (Steele and Lutz, 1995). Even the outcomes measures that appear pervasive in postsecondary education, such as retention and program completion rates, are calculated and reported differently across institutions and systems. This lack of standardization in outcomes data increases the difficulty of drawing meaningful comparisons between institutions, systems, and states and hence reduces the applicability of outcomes data to policymaking and evaluation.

If student outcomes information is to fulfill its potential for informing public policy, stronger data systems are needed. Fortunately, there are signs of support for this goal. For example, Steele and Lutz (1995) report that 82 percent of state boards responding to an ACT survey support the use of common outcomes measures across institutions. In addition, Russell (1995) traces the development of statewide higher education data systems. Today, 32 states have comprehensive statewide databases and another nine have more limited databases. These databases provide a strong foundation for assessing student outcomes and informing postsecondary policy and program development. New initiatives such as inter-organizational collaboration on the development of a postsecondary student data handbook show progress toward standardization of data elements in these databases (AACRAO, 1996).

Objectives of the Student Outcomes from a Data Perspective Working Group

The Student Outcomes From a Data Perspective Working Group has sought to identify strategies and recommendations for improving the quality of outcomes data. Rather than consider the ideal student outcomes system without regard for current resources and constraints, the group began with a description of current data systems. It then considered the strengths and limitations of these data systems and how they could be improved, given the perspective of current practitioners (both providers and users of data).

Given limited time and resources, the Working Group needed to make choices about which aspects of student outcomes data to address. Each choice necessarily involves trade-offs. The following decisions emerged from early Working Group meetings and deliberations:

First, the Working Group focused on unit record level student outcomes databases, largely because the vast majority of postsecondary institutions, systems, and states now maintain some form of student

database. These databases typically include information about a population (for example, all enrolled students or all graduating students) rather than a sample, and most of the information is drawn from official records, such as applications or transcripts. This process of record extraction is often more cost effective than other means of data collection, such as surveys or interviews. Because data are compiled in a standardized format over time and across programs or institutions, these databases enable both longitudinal and cross-sectional comparisons.

In making this choice, the Group did not intend to imply that unit record databases are *sufficient* as a source of information about outcomes. Many other types of information, such as reflective essays by alumni or satisfaction ratings by employers, add considerable depth and richness to the study of student outcomes. In addition, the Working Group recognizes that aggregate data are useful and appropriate under many circumstances. It leaves the task of analyzing the trade-offs between the two approaches to the Unit Record vs. Aggregate Data Working Group. The Working Group further acknowledges that while data providers and users must be concerned with the issues involved in the use of unit record data, these data are often the primary source of information on student outcomes for policy making.

Second, the Working Group wanted to review efforts to expand outcomes information beyond that which is available in student records alone (for example, retention and graduation). This led to the question of how various information sources can be linked to provide a more comprehensive view of outcomes, even if existing information sources will not address *all* important outcomes. Given the current policy emphasis on workforce development and the availability of unit records on employment through unemployment insurance files, the Group was especially interested in describing and assessing efforts to link educational and occupational data.

In making this choice, the Working Group did not intend to establish an *a priori* recommendation that all institutions should link their student records to occupational records. Members were in fact divided on the usefulness of such information and recognized that institutional mission and goals should shape student outcomes data collection and analysis. Instead, the choice to study linkages between educational and occupational data (via unemployment insurance files) provides a good example of the potential benefits and problems associated with linking files as a means of expanding outcomes information.

Third, given limited resources, the Working Group further chose to direct its efforts toward the student outcomes data used to inform state-level policy and decisionmaking. The primary reason for focusing on the state as the unit of analysis is that the greatest pressures for information about student outcomes are coming from state governments, which are increasingly preoccupied with issues of productivity and performance in postsecondary education (Ewell, 1995). The outcomes information of most relevance to state policy are drawn from state-level student databases, which therefore became a special focus of the Working Group's activities. The widespread presence of these databases, their ongoing use for various policy analyses, and the inclusion of standardized data from multiple institutions provides a relatively strong base on which to build. Additionally, lessons learned from an analysis of state-level data and policymaking may be applicable to other settings, including institutions, multi-state coalitions, and the federal government.

It is important to note that the Working Group's choice to study state-level unit record databases is not a *de facto* endorsement of these databases. Rather, state-level databases were selected because they provide the most representative and most developed student outcome data systems with sufficiently broad characteristics and capacities to allow for discussion and generalizable observations. The use of the state system as a unit of analysis also allowed for access to individual institutions, both public and private, two- and four-year, for the researchers. Thus, in focusing on state-level information and data, the Working Group in no way intended to assign the highest priority to public institutions or neglect independent institutions. Representatives of independent institutions and coalitions of independent institutions were included in data collection and received special attention in analysis. For example, the case studies included interviews with representatives of private colleges to determine the perceived costs and benefits to the independent sector of cooperative efforts with other schools (both in and out of the state) to standardize and share outcomes information.

Fourth, the Working Group has been especially interested in efforts within several states to link educational data to occupational data, such as unemployment insurance wage record files. In so doing, these states can measure students' occupational outcomes in a more comprehensive and cost effective manner than previously possible. These and other linkages represent important innovations in student outcomes data collection and analysis. At the same time, these linkages pose complex technical, logistical, and political challenges. By reviewing the experiences of states that have been pioneers in linking student

and occupational data, the Working Group hoped to assist others in effective planning, implementation, and use of linked or integrated databases.

This report summarizes the activities and conclusions of the Working Group. Major activities include: (a) conducting case studies of student outcomes data collection in two states; (b) analyzing the strengths and weaknesses of existing student outcomes data systems; and (c) formulating recommendations for strengthening student outcomes data systems.

II. Case Studies

To assist the Working Group in achieving its goals, the consultants were asked to conduct case studies of two states. The case studies were intended to:

- describe how participants and stakeholders in postsecondary education conceptualized and measured student outcomes; and
- assess the strengths and limitations of student outcomes data for diverse audiences, especially for policymakers and administrators.

Resource and time constraints limited the Working Group to two state visits. The Working Group recognized that two states, however carefully selected, cannot possibly represent the full range and diversity of student outcomes data systems. However, these case studies were not intended to yield results that could be generalized to other states. Instead, these case studies were intended to serve a generative purpose (Gergen, 1978). That is, by providing a systematic comparison of two diverse states, the case studies facilitated the efforts of the Working Group to generate discussion, analysis, and recommendations. In this context, it is important to note that the Working Group members' knowledge of their own or other states contributed additional useful "data" to inform and extend the analysis. With 12 states represented on the Working Group, results were subject to a rapid and convincing, albeit nontraditional, external validity check.

Moreover, recognizing the inherent limitations of two case studies, the Working Group considered the idea of follow-up activities, specifically by asking representatives of six to ten other states to provide structured information about student outcomes data collection and analysis as it relates to the two examples of Virginia and Texas. While not completed by this Working Group, such an activity will be part of the

work undertaken when the Student Outcomes Pilot gets underway in 1997, testing the evaluation model proposed by Terenzini (Terenzini, 1996).

Methods

Site Selection. Several criteria guided selection of states for the site visits. A key goal was to select states that had been identified as progressive in collection and use of outcomes data. Working Group members believed they had the most to learn from states that had devoted relatively high levels of attention to students outcomes and had implemented some innovative, or at least distinctive, approaches. Consultation with Working Group members and national experts in student outcomes data was used to identify states that met this criterion. In addition, the sites were selected to provide contrast on several important dimensions including: size, diversity, structure, and organization of the postsecondary sector; strength of the state coordinating board; presence of mandated competency testing; and state requirements or mandates regarding assessment. Third, some practical considerations influenced site selection, including the availability of NPEC members to serve as liaisons, the need to avoid overlap with state-level case studies underway for other projects, and the feasibility of conducting the site visit on relatively short notice during the summer months.

Based on these criteria, Texas and Virginia were selected as sites. Table 1 on the next page provides a comparison of these states on several dimensions.

Respondents. Within each state, we identified appropriate respondents through consultation with NPEC members from the state who had agreed to serve as liaisons for this purpose. We sought to interview representatives of each postsecondary sector (proprietary institutions, community colleges, and both public and private four-year institutions), systemwide officials, and state policymakers and administrators from higher education coordinating boards and other state agencies involved in postsecondary student outcomes data collection (for example, the State Occupational Information Coordinating Committee, or SOICC, in Texas). We also interviewed leaders of relevant state organizations (for example, independent colleges and institutional researchers in Texas and institutional consortia in Virginia). Following the site visits, we conducted additional interviews by telephone with representatives of businesses with strong workforce training programs. Table 2 summarizes the number of interviews conducted within different categories of institutions and organizations.

TABLE 1

COMPARISON OF TEXAS AND VIRGINIA

Characteristic	Texas	Virginia
Population	18,724,000	6,618,000
Number of public 2-year institutions	65	24
Number of public 4-year institutions	40	15
Number of private 2-year institutions	16	15
Number of private 4-year institutions	57	39
Number of vocational institutions	360	144
Proportion of population in poverty	19 percent	11 percent
Undergraduate enrollment	832,145	300,598
Graduate/professional school enrollment	122,350	53,551
Percent of college students who are minority group members	35 percent	24 percent
State coordinating board	Strong	Strong
Does a comprehensive statewide student database exist?	yes	yes
Is assessment of student outcomes mandated?	yes	yes
Are standardized tests administered to college students?	yes (TASP)[a]	no
State assessment initiative (Ewell)	Basic Skills/ Gatekeeping	Institution-centered
Public reporting	Annual	Biennial

a Texas Assessment of Student Progress.

TABLE 2

NUMBER AND DISTRIBUTION OF RESPONDENTS

	Texas	Virginia
State Coordinating Board	4	3
Other State Agencies	5	1
Proprietary Schools	2	2
Community Colleges	3	2
Private colleges or universities	2	2
Public colleges or universities	2	1
Business and industry	1	2
State associations or consortia	2	1
Total respondents*	18	12

* Total is less than the column sum because some respondents fit more than one category (for example, community college representative and leader of a state association).

Procedures. Two researchers conducted each case study. In most cases, the researchers jointly conducted the interviews, with one serving as a notetaker and the other serving as the interviewer. Researchers spent two days in Virginia and three days in Texas. Interviews ranged from 45 minutes to several hours. Within each state, the researchers visited two locations (Austin and Houston in Texas; Richmond and Roanoke in Virginia). However, respondents from other sections of the state were interviewed by telephone or agreed to drive to the study sites to meet with the researchers in person. Interviewers were semi-structured and based on the interview protocol displayed in Appendix B. Respondents were assured of confidentiality. That is, researchers agreed to protect the identity of individual respondents. In addition to conducting interviews, the researchers collected a considerable volume of written materials, including data dictionaries, student outcomes analyses and reports, strategic plans, performance standards, and "how to" guides developed for various audiences (for example, employers, policymakers). Appendix C displays the materials collected in each state.

Interview notes were written using a standard format. The researchers then systematically 'queried' these notes to derive both descriptive information about student outcomes data collection and an assessment of the strengths and weaknesses of the state data systems.

Limitations of the case studies. In addition to the need for caution in generalizing findings beyond the states studied, the case studies address only a limited set of questions relevant to student outcomes data. They reveal relatively little about how employers and others outside the traditional higher education sector conceptualize student outcomes. They do not address the potential of new and emerging technologies for expanding or influencing the collection and analysis of outcomes data. In addition, the case studies do not address the trade-offs between state databases and other databases, such as voluntary coalitions of institutions or national databases. Perhaps most important, they give little direct consideration of cognitive learning outcomes. All of these issues are important and deserving of consideration in future research. The "Recommendations" section of this report suggests several tasks that will enable NPEC to expand the scope of this investigation to address these issues.

Results

Both Texas and Virginia maintain centralized statewide student databases with unit record-level data. The outcomes information in these databases are primarily related to postsecondary students' educational success, including retention, degree attainment or program completion, time to degree, and transfers from community college to baccalaureate institutions. In this regard, these states are similar to many others--32 states maintain comprehensive statewide databases at the SHEEO level (Russell, 1995).

Unlike most other states, however, both Texas and Virginia collect standardized outcomes data about students' occupational preparation and success by linking student record databases with other sources of information, the most important of which is state unemployment insurance agency wage record information. Only about 10 other states have similar data sharing agreements in place (Russell, 1995). Thus, Virginia and Texas are not representative nor unique in their data collection, yet they serve as proxies of current practice.

In sum, student outcomes data in both states are centralized and integrated. In other words, data from many different institutions are compiled in a single unified database (in both cases, maintained by

the state coordinating board). In addition, these data are linked to other sources of information about outcomes, especially occupational and employment outcomes.

In the following section, we provide a brief overview of outcomes data collection and integrated databases in each state. We do not attempt to describe the myriad of outcomes analyses and assessments conducted by individual institutions, departments, or programs. Our focus is the state level. Table 3 summarizes and compares the integrated student databases in each state. Following this descriptive overview, we discuss the strengths and weaknesses of current student outcomes data systems.

Virginia. Although the State Council of Higher Education for Virginia (SCHEV) has collected student data from state postsecondary institutions for many years, the development and implementation of the SCHEV Integrated Student Database represents a significant advance in terms of both quantity and quality of information. The database includes records for each individual student for each term in which they were enrolled in a public or private two-year or four-year institution within Virginia. A total of 89 postsecondary institutions, about 360,000 students per semester, contribute to the database. It includes students in proprietary schools if the school offers at least a two-year degree that brings it under the coordination and approval of SCHEV.

The database is organized into six files: (1) institutional information, (2) headcount, (3) degrees conferred, (4) admissions, (5) course enrollments, and (5) financial aid. Except for the institutional information file, the data are at the level of individual students, using social security number (encrypted for confidentiality) as the identifier. Thus, the database enables analysts to track students through the postsecondary system over time and to identify (and study) students who are concurrently enrolled in more than one institution.

One distinguishing feature of the SCHEV Student Database is the inclusion of information about each course in which students were enrolled and their grades received in those courses. This creates a very large file (4 million records at last count), but also enables analysts to explore why certain outcomes occur and how specific courses or course sequences affect student outcomes within an institution or across institutions in the case of transferring students.

TABLE 3

COMPARISON OF TEXAS AND VIRGINIA INTEGRATED STUDENT DATABASES

	Texas Automated Student Follow-up	Virginia Research and Assessment Data Support System (RADDS)
Responsible agency	SOICC (and THECB)[1]	SCHEV[2]
Key staff	Marc Anderberg	Jean Keating
NPEC liaisons	Sheila Abercrombie, Marc Anderberg	Mike Mullen
Origin of linkages between educational and occupational data	initiated by community colleges	initiated by SCHEV
Funding for linking educational and occupational data	Temporary funding	Permanent funding
Postsecondary schools for which educational data are linked to occupational data	all community/technical colleges (N=69); one university; pilot test of proprietary schools	all public and private degree-granting institutions (and degree-granting for-profits) (N=89)
Student data flow -- input	2-year institutions-->THECB-->SOICC	Public 2-year institutions-->VCCS-->SCHEV Private 2-year institutions--SCHEV Public and Private 4-year institutions-->SCHEV
Definition of "student"	Enrolled for credit (will begin including non-credit students in 1997)	Enrolled for credit
Responsible for cleaning student data	THECB, working with institutions	Institutions, using cleaning specs and programs by SCHEV

[1]State Occupational Information Coordinating Council and Texas Higher Education Coordinating Board.

[2]State Council of Higher Education for Virginia.

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TABLE 3 (Continued)

COMPARISON OF TEXAS AND VIRGINIA INTEGRATED STUDENT DATABASES

	Texas **Automated Student Follow-up**	**Virginia** **Research and Assessment Data Support System (RADDS)**
Sources of occupational data for linkages	Unemployment Insurance Wage Records Personnel records -- U.S. Government Postal Service Department of Defense	Unemployment Insurance Wage Records (only by community colleges; some 4-year institutions use mechanisms to collect data to report in the aggregate)
Educational data in integrated database	demographic information units attempted/completed major retention graduation/program completion transfer employment status employer industry type wages earned during past quarter	*Student specific* demographic information units attempted/completed major educational background/admissions financial aid course enrollments course grades participation in remedial/development programs or courses retention graduation/program completion transfer course grades entry to graduate/professional school *Aggregate only (VCCS and 4-year vis-a-vis special studies)* employment status employer industry type wages earned during past quarter

TABLE 3 (Continued)

COMPARISON OF TEXAS AND VIRGINIA INTEGRATED STUDENT DATABASES

	Texas Automated Student Follow-up	Virginia Research and Assessment Data Support System (RADDS)
Number of records in database	about 400,000 student records/year	about 360,000 student records/term about 4 million total records/year[3]
Supplemental activities	Employer survey	Shared items for survey of graduates
Is database interactive?	No	Yes
IPEDS reporting	By institutions	By SCHEV for public, private, and proprietary degree-granting institutions

[3]Program generates subrecords for courses taken.

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The database was four-fifths complete by 1992-93. The admissions component was implemented first in Fall 1993. Thus, SCHEV will have limited ability to conduct retention studies until 1998, when the first cohort of students in the database has been enrolled for six years. However, a special, abbreviated admissions file back to 1989 was collected, enabling some graduation/retention studies to be performed currently, but without detailed information on course enrollments and grades prior to 1992.

Each public and private degree-granting postsecondary institution in the state is required to transmit data electronically to SCHEV once or twice per year using a standard format. After the data are loaded into the SCHEV computer, the institutions then clean the data using edit programs developed by SCHEV for this purpose. These programs flag errors, such as out-of-range values and internal inconsistencies, which must be corrected before the state will accept the file. SCHEV provides institutions with free computer accounts for this purpose.

By matching the records in the database against state Unemployment Commission data, SCHEV (working in concert with Virginia Community College System [VCCS] for community colleges) obtains employment outcome data for graduates, including whether the student is employed within the state, the type of industry in which he or she is working, and their earnings. They can also determine whether and where students are employed while attending college.

SCHEV conducts a variety of analyses intended primarily for the state legislature and the institutions. Standard reports address degrees conferred, student characteristics, and financial aid. SCHEV also plans to enhance the traditional graduation report, utilizing the system to produce retention and progression rates as well as graduation rates by individual institutions. Ad hoc reports include tracking student progress through the postsecondary system and an ongoing evaluation of developmental (remedial) programs. In addition, SCHEV compiles the federal Integrated Postsecondary Education Data System (IPEDS) reports for all public, private, and proprietary institutions in the state that offer two-year degrees and above.

Virginia postsecondary institutions coordinated by SCHEV have on-line access to aggregated information from the database. To assist institutional researchers or other analysts in using the database, a library of SAS programs is available. Users can access programs developed elsewhere and, by changing a few lines, adapt them to their particular research need. This enhances institutional analytic capabilities,

but also reduces the number of "routine" data requests that SCHEV receives. However, SCHEV staff report no reduction in overall requests, just a shift in the complexity of questions asked.

Routine and most frequently asked information from past years are also available through the Internet on SCHEV's Web site.

Reporting by Virginia's 23 community colleges is compiled by the VCCS prior to transfer of data files to SCHEV. The Research and Assessment Data Support System (RADSS) developed by VCCS contains courses taken and grades received by community college students for the past six years and currently contains about six million records. By matching the records in RADSS against state Unemployment Commission data, VCCS obtains employment outcome data for graduates, including whether students are employed within the state, the type of industry in which they are working, and their earnings. Data about employment outcomes are primarily used by VCCS to describe the percentage of graduates employed in their field of study in informational brochures for the public.

The SCHEV Student Database files are not the only student data that SCHEV obtains. The agency has facilitated the development of a common set of items to be included on institutional surveys of recent graduates in order to facilitate comparisons over time and across institutions. SCHEV also reviews such diverse sources of information as accreditation self-studies, academic program reviews, and institutional surveys of students and employers.

Texas. The Texas Higher Education Coordinating Board (THECB) is the state agency with primary responsibility for postsecondary education. In addition, the Texas Workforce Commission administers many aspects of proprietary school education (although THECB reviews degree programs offered by proprietary schools). Furthermore, the Texas State Occupational Information Coordinating Council (SOICC), housed within the Workforce Commission, plays a key role in outcomes data collection and analysis.

Public institutions report annually to the Coordinating Board through their systemwide offices (for universities) or directly (for community colleges). They provide standardized information about each student enrolled in for-credit programs. Data include standard demographic variables, student major, units attempted and completed, and retention/graduation. By using social security number as a unique identifier,

THECB can then determine whether students have transferred to a state postsecondary institution and, if so, where. Unlike Virginia, Texas does not collect course enrollment data or grades (either by course or overall GPA). The state does collect remediation and Texas Assessment of Student Progress (TASP) scores, for those who take the TASP (students with high SAT scores do not take TASP).

THECB staff clean the data and develop official files that are certified as clean and cannot be changed. Institutions are also required to report aggregate information in response to state requirements for specific performance measures, including retention and graduation rates and licensure rates on professional exams (for example, teaching, engineering).

The development of an automated follow-up system has significantly enhanced outcomes data collection and analysis for Texas community and technical colleges, particularly with regard to labor market outcomes. The automated follow-up effort began in the early 1990s by a small group of community colleges. As more community colleges expressed interest in the follow-up system, and as the state recognized the potential of the system, more formal and stable administration was required. SOICC, a neutral and independent organization with analytic capacity, was asked to take on this role. Today, all 69 community and technical colleges in the state--about 400,000 students per year--participate in the automated follow-up. Resource limitations prohibit participation by other institutions, although SOICC does plan to conduct a small pilot study of proprietary schools this year. In addition, one university participates through a pilot study.

SOICC first administered the automated follow-up in 1993. For its first three years, the follow-up was primarily funded with Perkins Capacity-building funds. Launched in 1996, it has three years of funding from Labor Department One-stop funds. Among SOICC's major goals is to obtain long-term funding for the automated follow-up system from the state legislature.

The automated follow-up system is modeled after Florida's. THECB provides SOICC with the student data. Using social security number as the identifier, the student data are matched against four sources of employment data: (1) state Unemployment Insurance wage records; (2) personnel files for the federal civil service; (3) personnel files for the Postal Service; and (4) personnel files for the military. Specific data elements include whether students are employed, their employer, the type of industry in which they are employed, and their quarterly earnings.

After merging the data, SOICC conducts limited analyses and then turns the data back over to the coordinating board for additional analysis and dissemination to the participating institutions. To date, most analyses using automated follow-up data are descriptive and aggregate data across all institutions. SOICC and THECB avoid disseminating results for individual institutions, especially institutional rankings or comparisons. Instead, they believe that each institution should be compared against itself over time. SOICC strives to disseminate data to three audiences: institutions (for self-improvement); state agencies (for program and institutional oversight); and consumers (for informed decision making).

Institutions and the THECB use the data in a variety of ways. The state legislature requires each community college program or department to achieve an 85 percent employment rate for its graduates. Programs that do not achieve this face serious obstacles to developing new programs. The automated follow-up data help to determine whether departments have met this standard. Furthermore, the data are used to help justify new programs, by demonstrating labor market outcomes for similar programs at other institutions. In addition, the data are used for state-mandated program reviews, including an annual self-evaluation and a state evaluation conducted once every four years (that is, all programs are reviewed by the state on a four-year cycle).

To supplement the automated student data, SOICC also contracts for the administration of an employer survey. In the past, each postsecondary institution, school district, and other educational organizations (for example, JTPA) conducted their own employer surveys, creating significant burden for employers and very uneven data quality. By consolidating these disparate efforts, SOICC has achieved an 80 percent response rate, improved data quality, and obtained data that can be aggregated and compared over time and across employers, institutions, or regions. The survey results are applied to both program evaluation and program planning.

Because the automated follow-up data do not include certain professions (this issue is discussed in the next section in more detail), SOICC and THECB invite programs to supplement the data by conducting their own student and alumni surveys. Employment information obtained in this manner is added to the database, provided it meets quality control standards.

In addition to participation in the automated follow-up, the community colleges have been proactive in several other aspects of outcomes data collection. The colleges now use the Lonestar or

Lonestar+ systems, providing standardized student data that is well suited to longitudinal analyses and can be compared or combined with other institutions. In addition, the community colleges and many public universities are developing electronic transcripts. The University of Texas has agreed to warehouse these transcripts and serve as a central clearinghouse. Thus, community colleges wanting information on where students transfer and their success rates can search for student transcripts at a variety of institutions. When the transcripts are located, the institutions can obtain electronic copies that can be entered into student databases.

Proprietary schools in Texas are approved and regulated by the Texas Workforce Commission. Institutions are required to report annually on student retention, completion, and employment rate for graduates. Employment is further divided into the percentage of students who found employment with institutional assistance (identified as the placement rate) or through any means (employment rate). The Commission may inspect back-up documentation for these figures during site visits. Starting this year, the Commission is requiring proprietary schools to provide student-level data for program completers, including social security number and employer, which will facilitate outcomes analysis. Because few proprietary schools have sophisticated data processing capabilities, they provide the data to the Commission in hard copy, not electronically. Starting this year, SOICC plans to include a small number of proprietary school students in their automated follow-up.

Discussion: Strengths and Weakness of the Current "State of the Art"

The case studies provided opportunities to informally assess the strengths and weaknesses of state-level student outcomes data. The centralized student databases in these states enable sophisticated analyses of postsecondary outcomes. Moreover, by linking educational and employment data, these states have greatly extended the range of outcomes data available to institutions, policymakers, and the public.

Despite the benefits of linking educational and occupational data, the case studies suggest that such linkages create a number of new challenges and raise the salience of some unresolved issues related to student data in general. Case study respondents expressed a number of concerns about these linkages, ranging from data quality to fears that the data will be inappropriately politicized. Many of these concerns focus on the uses to which the data will be put rather than the data themselves.

These concerns were presented to the Working Group in a preliminary report and discussed during the Working Group's October meeting. In this section, we describe the major areas of concern emerging from the case studies. We also present the perspectives of Working Group members about these issues.

Range of student outcomes data. By linking educational data to state employment data and other sources of employment information, Texas and Virginia (and other states not involved in the case studies) can track students into the workplace, opening an important new arena for outcomes assessment. This relatively simple innovation represents a significant expansion in the scope of student outcomes data collection and analysis.

Nonetheless, in Texas, Virginia, and throughout the nation, little to no information is available at the state level about many other types of student outcomes, such as students' cognitive and intellectual skills or development, content learning, life skills, attitudes or values, social development, quality of life, or psychosocial development. Thus, the data available at the state level focus on only a subset of postsecondary outcomes. More specifically, the outcomes data available in the study states address only four of 12 categories in the taxonomy developed by the Student Outcomes from a Policy Perspective Working Group: Occupational Preparation; Educational Success; Success in Transitions; and Economic Benefits.

Individual institutions, of course, may collect a much broader range of outcomes data that address other components of the taxonomy. Because such information is generally not standardized across (or even within) institutions, is often qualitative in nature (for example, portfolios) and may not be collected for all students or in all years, it is not integrated into state databases. Nonetheless, institutional-level data may respond to important policy questions and contribute to program development and assessment.

Furthermore, Working Group members noted that some outcomes are more appropriately measured at the institutional (or even the program) level than the state level. For example, some question whether states could or should collect data about psychosocial outcomes, which are generally viewed as more peripheral to the core purposes of postsecondary education than educational and occupational outcomes. Similarly, assessments of students' content knowledge may be most valid and useful when conducted by faculty in the relevant disciplines and departments rather than through standardized statewide measures that cannot take local goals and curriculum into account. This observation suggests that a future direction

for postsecondary educators, administrators, and policymakers is to clarify which agencies or organizations have responsibility for measuring and tracking various student outcomes.

Quality of Unemployment Insurance Wage Record data. Although wage record files are the major source of information about occupational outcomes in Texas and Virginia, respondents in both states noted a number of problems residing either in the data themselves or the links between these data and educational data. These problems create ambiguity in interpreting occupational outcomes data. They include:

- Unemployment Insurance Wage Record data are not available for use in student outcomes assessment in all states;
- Data regarding contract workers and self-employed individuals are not available from wage record data. This covers a large--and growing--group of occupations with widely differing levels of training;
- Data regarding individuals' occupations are not available for many students. The data may indicate, for example, that an individual is employed in a particular type of industry, but may not indicate what the whether the individual is a secretary, line worker, or manager;
- Rapid changes in the nature of work increase the difficulty of finding appropriate job or industry classifications for all individuals and jobs;
- Data exchange agreements are not in place among states. As a result, outcomes information for people who leave the state may be unavailable (other than federal government, postal service, or military employees);
- The employment data are based on self-reports by employers. The data quality is largely unknown.
- Wage data can be difficult to interpret. Texas, for example, obtains quarterly earnings without any information about duration of employment or full-time/part-time status. Thus, it is difficult to determine actual salary levels.
- Information that institutions and states might like to have are not available from these databases. This is particularly true for attitudinal data, such as student or employer satisfaction, whether students' employment fulfills their goals and aspirations, self-rated skills and abilities, perceived preparation for the workplace, and so forth.

Despite these problems, Working Group members perceive wage record data as superior to alternative data sources. They pointed out that state-level analysts in both Texas and Virginia reported

obtaining outcomes data from the wage record files for over three quarters of the students in their databases. In addition, both states are able to fill some of the data gaps with information from other sources. The wage record data are also viewed as of higher quality than other data, such as self-reported information from students and graduates. Furthermore, linking wage record data to educational data is relatively low in cost. Although the Working Group members recognize that the wage record data are imperfect, they believe the data are of sufficient quality to make meaningful contributions to policy and program development.

Quality of educational data. Respondents pointed out that the educational data maintained by the state also have some limitations:

- Data quality is a continued concern. Despite strong efforts by the Texas and Virginia Coordinating Boards to obtain clean student data, institutional respondents in both states questioned the quality of the data. Similarly, despite state efforts to provide standard data element definitions, respondents acknowledged that different institutions might interpret these definitions somewhat differently.

- Virginia obtains only limited information about occupational outcomes for proprietary school students. Texas SOICC does not link data from universities, private colleges, or proprietary schools to wage record files. The issue here is burden and incentive to include these data sources versus costs.

- Only limited reciprocal agreements to exchange data with other states are in place. Schools and colleges that compare themselves to out-of-state institutions, send many graduates out of state, or serve a multi-state service area may derive little benefit from data restricted to a single state.

- Neither state currently collects data about non-credit students (although Texas expects to begin doing so this year). Because many community colleges are expanding their non-credit programs and courses (for example, through contracts with business and industry), a substantial—and growing—segment of the student body is excluded from the databases. However, the most widespread measures of student outcomes—retention and program completion—have at best limited applicability to this population.

Discussion during the Working Group meeting highlighted the fact that these databases effectively address a wide range of policy needs. The weaknesses noted above should not be interpreted to indicate that such databases are ineffective but rather point to future directions for improvement.

Privacy and confidentiality. A number of respondents in both states (especially those who work in postsecondary institutions) expressed concern about violating student privacy and confidentiality, even

if identifying information is encrypted or otherwise protected. Respondents were worried that information about individuals' academic progress or earnings might be inappropriately reviewed or released. For example, one respondent wondered if a legislator or the press might one day be able to obtain information about political candidates from the database. A related question was whether students have or should have the right to withhold information from the state. In other words, some respondents believed that the state should obtain informed consent from students, especially for students in private institutions, prior to obtaining data about their educational and occupational achievements.

In response to this concern over privacy and confidentiality, Texas SOICC plans to stop disseminating individual-level data to the campuses and instead provide aggregate information only. This solution poses problems for institutional researchers and other administrators, who want to use the data in their own evaluations and analyses.

In discussion of this issue, Working Group participants pointed out that there have been no known breaches or abuses of confidentiality in these or other states. Well-established procedures and policies for data safeguarding are in place. The case study results suggest to the Working Group a need for states to develop and disseminate guiding principles related to privacy and confidentiality. These principles should clarify the definition and limits (if any) of confidentiality of individual records, and they should address methods and procedures for protecting confidentiality. Equally important is the need to communicate this information to concerned institutions and individuals.

Burden and reciprocity between institutions and states. Institutions (especially small institutions with limited resources for institutional research) already face high levels of burden related to reporting student data to the state and federal government, accreditation associations, and college guide surveys. These requirements leave institutional researchers with less time to serve their own constituents (for example, campus administrators and faculty). Thus, new demands from the state for data are often poorly received by campuses. At worse, these demands may have the unintended effect of decreasing the time institutions spend on assessments intended for institutional self-improvement and program development.

In order to reduce institutional burden associated with providing data for centralized state databases, SCHEV completes some IPEDS reports for public institutions in the state, and Texas limits the amount and frequency of data reporting. Still, many campus-based respondents (especially in Virginia)

perceive their reporting requirements as high. Burden is particularly problematic for private institutions, because they receive less support from the state (for example, with IPEDS reporting) than do public institutions. In addition, private institutions derive less benefit from statewide data than do public institutions.

Working Group members perceive concerns about burden as primarily developmental. They noted that Virginia (where concerns were highest) has undergone fairly recent changes in its reporting requirements and database structure. Over time, the institutions are likely to become more efficient in preparing and transmitting data to the state, and burden will decrease. Additionally, Working Group members noted that enhanced information about student outcomes flowing back to the institutions should provide useful information that justifies the time spent transferring data to the state.

In addition, one reason the Working Group members were interested in reviewing linked databases is that this represents a strategy to provide more and better information on outcomes without a significant increase in burden. In the case of wage records, for example, the institution does not have to invest resources in following up students to obtain occupational outcome information.

Ownership and use of outcomes data. Over half the case study respondents from postsecondary institutions expressed concern about whether the state could prevent politicians, reporters, or others from inappropriately using student outcomes data. A key issue is what types of information state agencies may be asked to release. For example, several respondents worried about the press obtaining and publishing ratings or rankings of campuses on various dimensions. Such information can be misleading and divisive, and can erode institutional support for state-level databases. Similarly, researchers, policymakers, or administrators may draw inappropriate conclusions from outcomes data. (The interviews provided numerous examples of this phenomenon.)

These risks are perceived as higher when states link educational to occupational data. Some respondents suggested that the novelty of the occupational data makes them attractive to the media. Additionally, accurate interpretation of data about occupational outcomes requires some sophistication and contextual knowledge; thus, these data present many opportunities for naive analysts to draw inappropriate conclusions.

Texas and Virginia have responded to this issue in different ways. Virginia has used the Web and Internet to enable users to gain direct access to a large volume of information. At the same time, SCHEV strives to provide institutions, policymakers, and other users with the appropriate contextual information for interpreting the data. Direct access to the data is more limited in Texas than Virginia. Texas SOICC discourages institutional comparisons and instead tries to provide either aggregate analyses (for example, all community colleges) or comparisons of institutions to themselves, over time.

Working Group members reacted to this issue by pointing out the need for states and institutions to clarify which agency "owns" the student data and who can release results or analyses based on the data. Just as guiding principles are needed related to privacy and confidentiality, principles are needed to determine who has access to the data and how information should be released to the public.

Working Group members also expressed support for state policies that provide broad access to data. For example, as the public gains access to outcomes data, stakeholders and advocates become better informed about postsecondary education. Those participating in policy debates can share the same data and information, increasing the efficiency of the decisionmaking process. Analyses that provide new insights into postsecondary education may be conducted. Such opportunities counterbalance the problems described by the case study respondents.

Occupational data and the vocationalization of postsecondary education. Respondents in both states--particularly but not exclusively those from four-year institutions--expressed concern that linking educational to occupational data may reflect and potentially amplify the vocationalization of education. These respondents are concerned that the growing interest at the state level in occupational outcomes is inconsistent with the goals and mission of their institutions and reduces the notion of higher education to job training. At one extreme, several respondents (all in four-year institutions) believed that the state should stop collecting and disseminating occupational data since such data do little (in their opinion) to inform questions of institutional performance or effectiveness.

Other respondents disagreed with this perspective. These respondents noted that the public and many policymakers in fact view postsecondary education as job training. In addition, employment outcomes are easily available whereas data related to critical thinking skills are not. To withhold some outcomes information because all desired outcomes information is not available is neither logical nor likely

to win the approval of policymakers, employers, or taxpayers. Instead, higher education institutions and coordinating boards have an obligation to educate audiences for outcomes information about the limits of available data and to develop new measures for under-studied outcomes.

The Working Group members were similarly divided about this issue. They noted that certain sectors of the postsecondary community attach greater value to occupational outcomes than do others. They also agreed that effective student outcomes data systems will use data appropriate to institutional missions and values.

Multiple goals. Student outcomes data are used to address a range of goals or purposes. For example, they may be used to certify student competency, assess institutional effectiveness, or compare institutions. They may be used by institutions for self-improvement, by policymakers to ensure institutional accountability and to measure performance, or by consumers for informed decisionmaking. They also can be used for compliance reporting to the state and federal governments. The degree to which a single database can satisfy all these goals is questionable. Although database administrators in both states expect their data to serve multiple goals, in reality the data are primarily used for compliance reporting and assessments of institutional performance.

Discussion in the Working Group meeting emphasized that the goals and uses of outcomes data have changed and will continue to change over time. Thus, student databases must be flexible enough to serve multiple, and evolving, goals. Several participants suggested that centralized student databases are best conceptualized as indicator systems. By enabling comparisons over time and across institutions and student subgroups, the databases can be used to identify student outcomes trends or issues for further, more in-depth analysis through follow-up studies.

Summary. Both Texas and Virginia maintain centralized state-level student databases. Both also link these databases to data about students' occupational activities, drawn primarily (but not exclusively) from State Unemployment Insurance Wage Record information. These integrated databases expanded the states' ability to respond to policymaker concerns about institutional performance and effectiveness. At the same time, the development and expansion of the databases raise a number of concerns, particularly among institutional administrators. For example, although the links to wage record data provide occupational information that has not previously been available on such a large scale, the wage record

information has some important limitations. Even with these linkages in place, data are unavailable for a wide range of student outcomes, especially at the state level. There are unresolved issues related to how student outcome data will be used, who can release findings to the public, and what confidentiality and privacy protections are or should be in place. These unresolved issues provide the foundation for Working Group recommendations.

III. Recommendations

The Working Group offers the following recommendations to institutions, systems, states, and other agencies that are working to develop or enhance student databases:

1. **The quality and scope of student outcomes analyses can and should be expanded by linking various sources of data. Although decisions about linking must be made in the context of institutional goals and missions, the types of linkages that should be considered include:**

   - linkages across postsecondary institutions, to enable longitudinal analyses of students' progress through the sector and to facilitate comparisons across institutions and programs;
   - linkages with K-12 schools, to obtain additional background data that can contribute to an understanding of why and how observed patterns of student outcomes occur;
   - linkages across agencies, to provide outcomes data that extend beyond the domain of educational success (Terenzini, 1996). For example, by linking student data to unemployment insurance wage record data, states and institutions can obtain information about occupational outcomes;
   - linkages with business, to obtain outcomes data that reflect employer satisfaction with and assessments of students and graduates; and
   - linkages across states, to enable outcomes assessments for students who leave the state (for example, for graduate school or employment), and to facilitate meaningful comparisons across states, including benchmarking. This may be especially important for institutions that compare themselves to out-of-state colleges and universities, such as many private colleges and universities.

The following steps will assist institutions and states in implementing this recommendation:

- Follow-on research is needed to: (a) identify sources of data with which student data can be linked; (b) assess the quality and limitations of these data; (c) prioritize the importance of various linkages, based on the opportunities and problems associated with various data sources; (d) clarify the definitions of data elements; and (e) address the technical, political, financial, and logistical issues involved in gaining access to and using these data; and

- A cooperative effort involving representatives from all components of the postsecondary sector is needed to identify and define a common core of data elements that should be linked across postsecondary institutions and states. This group should also consider the types of incentives and resources that are needed for institutions and systems to adopt this common core.

2. **The concept of reciprocity must underlie database development, analysis, utilization, and dissemination. For any institution, the costs and benefits of contributing to student outcomes databases should be roughly in balance. As the reporting requirements and requests facing institutions increase, burden becomes a serious concern. Those requesting and collecting data should strive to minimize time and expense incurred by those providing the data by:**

   - building upon current data definitions;

   - using the database for required reporting (for example, compliance reports, IPEDS), provided institutions have the opportunity to review reports prior to submission; and

   - developing a clear understanding of data ownership and clarifying allowable versus non-allowable uses of the database.

To implement this recommendation, follow-on research is needed to compile current data definitions, determine optimal approaches to data transfer, and establish guidelines for cleaning and editing centralized databases.

3. **An important direction for the future is to expand the operational definition of "postsecondary student" and thereby extend student databases. This will also involve expanding the types of instructional delivery systems about which data are available.**

   - Non-credit students are an important component of postsecondary education, especially the public service mission. Thus, student databases should include information about non-credit students, such as enrollments and activity within and

across types of non-credit areas. In addition, research is needed to develop viable outcomes indicators for non-credit students.

- Student databases should develop and maintain the capacity to describe, track, and assess methods of instructional delivery to allow future analyses of non-traditional instruction (for example, distance learning) in response to emerging policy questions about effectiveness and efficiency.

- Business and industry are devoting more of their resources to provide industry-based training and education. However, little information is collected about these efforts or their outcomes. Thus, we recommend research to distinguish industry-based training from traditional postsecondary education.

4. **In-depth work is needed on data definitions to ensure that linkages are meaningful and data are appropriately interpreted. Specific steps should include:**

   - NPEC Council members should review the Postsecondary Student Data Handbook (AACRAO, 1996) to ensure that data elements and their definitions are appropriate for student outcomes measures;

   - Develop analysis protocols for computing and comparing student outcome measures, recognizing that individual states and institutions may compute measures differently. These different measures should be identified separately. The protocol development should include input from the postsecondary sector and from business and industry; and

   - Encourage institutions to use common analysis protocols in presenting outcomes data to audiences, especially consumers and students.

5. **A set of guidelines is needed to assist institutions, states, and other organizations in developing and using student outcomes databases appropriately for different goals. These databases have served and will continue to serve a variety of goals, such as identifying student needs, improving the quality of postsecondary programs, increasing accountability, informing policy development, and assisting consumers in decisionmaking. The databases therefore must be designed to yield both descriptive information about the status and achievement of postsecondary students and evaluative information about educational programs and policies. Among the issues that must be considered in developing guidelines responsive to these goals and objectives are:**

   - How can student databases be constructed and analyzed in a manner that generates credible and useful information for diverse audiences?

   - How can outcomes analyses that combine information from a number of institutions or organizations, respond appropriately to wide variations in institutional mission and context?

- Under what circumstances are samples versus universe (that is, census) approaches most appropriate?

- What is the appropriate length of the data collection cycle? How often, and when, should data be collected, and what time frame should be encompassed in outcomes analyses?

- How can data on the interactive effects of student goals, classroom practices, and institutional practices or characteristics be captured in student outcomes analyses?

To implement this recommendation, we recommend convening a committee to write a white paper addressing these and related questions, based on the professional literature and the experiences and knowledge of NPEC participants.

6. **To integrate the work of the Student Outcomes From a Data Perspective and Student Outcomes From a Policy Perspective Working Groups, a follow-on project that incorporates the concerns and interests of both groups should be conducted. This project involves developing expert review panels to address the issues identified by the two Working Groups. The review panels would be organized around key outcome areas described by Terenzini (1996). Specific tasks assigned to the review panels might include, but would not be restricted to, the following:**

   - desegregating the outcomes and developing operational definitions of the underlying constructs;

   - determining the specific data elements to be addressed;

   - using the criteria proposed by Terenzini (1996) to evaluate potential outcome measures or data elements;

   - designing or describing specific variables and measures that will extend student outcomes information and enhance its relevance for policymaking;

   - identifying data sources for these variables or, if the data do not already exist, providing recommendations for developing measures and data collection; and

   - discussing the manner in which the variables inform various goals of outcomes analyses and/or their likely relevance to diverse audiences for outcomes information.

In short, each panel would focus on a specific content area, applying the recommendations and suggestions of both Working Groups to derive more specific "second generation" recommendations. The panels should have broad membership reflective of the diversity of the postsecondary sector. Initially,

however, a pilot project involving some members of each Student Outcomes Working Group and others as appropriate is recommended. The pilot project would focus on two outcome areas to be determined in consultation with the NPEC Steering Committee. Results of the pilot project would assist NPEC in determining if a larger investment of time and resources is justified. If the pilot test is successful, the next step would be to convene a larger set of expert review panels with support and technical assistance from the Council.

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APPENDIX A

OUTCOMES TAXONOMY DEVELOPED BY THE NPEC WORKING GROUP ON STUDENT OUTCOMES DATA FROM A POLICY PERSPECTIVE

Communication and Computational Skills: Reading, writing, and oral communication; quantitative/computational skills; information acquisition skills (technological and otherwise)

Higher-Order Cognitive and Intellectual Development: Critical thinking, problem solving, analytical and evaluative skills, formal and postformal reasoning, conceptual complexity, creativity, moral reasoning (as a process)

Content Learning: General (breadth) and specific (depth) of knowledge

Occupational Preparation: Knowledge and skills specific to an occupation; occupational choice; occupational status; job placement; licensure; job satisfaction; performance; productivity; promotability; occupational mobility; employer satisfaction, occupational aspirations

Workplace Skills: Motivation to perform in the workplace, dependability, adaptability, persistence, initiative, leadership skills, ability to work independently and in groups

Educational Success: Retention/persistence, educational aspirations, educational attainment, degree completion, time-to-degree, satisfaction

Success in Transitions: Education-to-work, education-to-education, work-to-education

Economic Benefits: Income, return on investment, standard of living, geographic mobility, educationally-related financial indebtedness

Psychosocial Development: Autonomy, tolerance for diversity, intellectual orientation, interpersonal skills and maturity, motivation (generic), identity development, self-concept and self-esteem, personal adjustment

Attitudes, Values, and Beliefs: Occupational, educational, cultural (arts), social, political, religious, interpersonal (for example, diversity), standards of conduct, orientation to life-long learning

Civic Development: Group affiliations/memberships, citizenship, community involvement, voting participation

Quality of Life: Sense of well-being, health, consumer behaviors, savings and investment behaviors, leisure activity

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APPENDIX B

INTERVIEW PROTOCOL

We are working with a group of representatives from NCES [explain if necessary], public and private colleges and universities, and SHEEO [explain if necessary], who are undertaking several projects to improve data collection about the outcomes of student learning. The group is known as NPEC, the National Postsecondary Education Cooperative. We are interested in learning about the kinds of outcome measures (indicators) for students/learners that are tracked in all situations where formal postsecondary learning takes place. This includes colleges and universities, two- and four-year, public and private, as well as business and industry training sites. We are interested only in outcomes data. We are concerned only with what kinds of data you collect and report, not the actual numbers. We have reviewed your (databooks, reports, etc.) and have eight questions that should take about 50 minutes to answer. [Here's a list of the questions. May we proceed?]

1. It's useful to establish some common ground for our questions. What does your office (unit/system/state) mean by student/learners? What definition(s) apply? How was this definition arrived at--consensus, a supplied definition?

2. Verification of Role of Office

   A. What is the role (contribution of) this office to policymakers in the state?
   B. Does this office allocate (recommend allocation of) funds? If so, to what organizations (systems, institutions)?
   C. To whom is this office accountable?
   D. What is the funding source for this office?
   E. What is the relationship between this office and (a) the public higher education system, including two-year and four-year institutions; (b) the private higher education system, including two-year and four-year institutions; (c) private/proprietary vocational and business schools; and others such as business and industry-based training programs?
   F. What other organizations related to postsecondary, vocational, or higher education do you work with?

3. What data/information about student outcomes do you/your office collect or review? Probes: (a) communication and computational skills; (b) cognitive and intellectual development; (c) content learning; (d) occupational preparation; workplace skills; (e) attitudes, values, beliefs; (f) educational success; (g) economic benefits; (h) social development; (i) quality of life; (j) psychosocial development; and (k) successful transitions [school to work, work to school, school to school].

4. How do you obtain these data? What organizations, businesses, institutions, or individuals provide you with the data? (Two-year, four-year, proprietary, business/industry sites probe).

   A. Do they provide this information on a voluntary basis, or is it mandated? If voluntary, why do they provide the data? If mandated, what is the purpose of the mandata and who issued the mandate? Are there differences between what the public institutions and the privates provide?

B. What incentives do you provide, if any, to encourage and facilitate them to report this information?

C. What kinds of guidelines or specifications, if any, do you provide re: student outcomes data?

D. What is the quality of the data? Is it complete and accurate? Is it timely? How often is it collected and reported?

E. Do you conduct any analyses of the data you receive? If so, describe. What is your unit of analyses (individual student or institutional level?

F. In what forms are the data received (machine readable, tables, etc.)?

5. How do you use these data?

   A. Do you include them in any reports or memos? If so, describe. (Probe for schedule of report: Monthly, occasionally, ad hoc, annual and relationship to #C below. Who is the intended audience for these reports or memos? What is the purpose or goal of these reports?

   B. Do you and/or others use the date in decisionmaking? If so, please describe.

   C. Do you and/or others use them to monitor compliance or to evaluate institutions or programs? If so, please describe.

6. What data about student outcomes would you like to have but do not have at this time?

   A. Why would you like to have these data-how would you use them?

   B. What are the problems or barriers that prevent you from obtaining them?

7. How could the data about student outcomes that you currently obtain be improved or made more useful? What suggestions can you provide for improving data quality? What suggestions can you provide for improving the quality of student outcomes data in this state?

8. Are there data collected that seem to have no use? Why is that data collected? What reporting is done from that data?

9. Are there any schools, government agencies, professional associations, businesses, or other organizations that stand out as examples in the area of student outcomes data collection? If so please describe.

Thank you.

APPENDIX C

MATERIALS COLLECTED AND REVIEWED

Texas

"Texas Cares," State Occupational Information Coordinating Committee (SOICC), Texas Workforce Commission, no date. A computerized database accessible in high schools, colleges, and state agencies for college and career information.

"Automated Student and Adult Learner Follow-up System," SOICC, November 20, 1995.

"The Data Game: Labor Market Information Source Directory," Texas Employment Commission and SOICC, February 1996.

"Discovering Your Future: Industry and Occupational Projections to the Year 2000," Texas Employment Commission and SOICC, no date.

"Emerging and Evolving Occupations in Texas," Developed by the Texas State Occupational Information Coordinating Committee, June 1996. Describes emerging occupations in thirteen industry areas in Texas.

"Creating an Information Based, Market-Driven Education and Workforce Development System," by Richard Foreschle. Published in Beyond the Numbers, an occasional paper series of the Texas SOICC, July 30, 1996.

"Career Majors in Texas Public Education," SOICC, August, 1996.

"Completion, Employment and Placement Data Collection for Vocational Programs in Texas Proprietary Schools," Prepared by the Texas Workforce Commission, March 1, 1996.

"ICUT Annual Statistical Supplement," Independent Colleges and Universities of Texas, Inc. September 1995. Profile data on the 40 private institutions in Texas in the aggregate.

"1995 Statistical Report," Texas Higher Education Coordinating Board. Statistical information on publics in Texas in the aggregate and by institution and system.

Sheets from the Appropriations, 1995. Provided by Coordinating Board. E&G funding as related to institutional goals.

Questionnaire for collecting mission, planning, and resources information. 8/6/96. Provided by Coordinating Commission. Forms for collecting success measures.

"The Art Institute of Houston Catalogue," 1996. Describes programs of study and degree and program requirements.

"Annual Update for Community and Technical College Administrators," Texas Higher Education Coordinating Board, September 5, 1996. Slides for video conference on system structure and accountability plan for year.

"Completer and Placement/Employment Data Collection packet," Texas Workforce Commission, August 21, 1996. Reporting guidelines for proprietary schools.

"Texas Workforce Commission 1997-98 Biennium Performance Measure Table," provided by Workforce Commission, no date. Performance measures linked to strategic plan document for proprietary schools.

"Annual Data Profile State-wide Summary," Texas Higher Education Coordinating Board, August 15, 1996. Headcount by gender, race, program, etc.

"CTC Division Interface with Agency Mainframe," THECB management document.

"Automated Student and Adult Learner Follow-up System: Community and Technical College Statewide Summary for 1993-94 Former Students," THECB. Location of students attending in fall 1993 but who did not graduate nor return, by program.

"Reporting and Procedures Manual for Public Community and Technical Colleges," THECB, Educational Data Center, September 1995. Management and reporting manual.

"Reporting and Procedures Manual for Public Universities," THECB, Educational Data Center, September 1995.

"Data Information Guide," February 1995 THECB. Outlines data reports available and how to access information.

"Appendices to the Reporting and Procedures Manual for Community and Technical Colleges and Universities and Health Sciences Centers," THECB, Educational Data Center, September 1995.

Memo to CTC (reporting officials) from Kenneth Dalley, December 21, 1995. Administrative clarification of reporting of continuing education students reporting.

University of Texas at Austin memo to Robert Berdahl from Marsha Moss. "Undergraduate Student Flow by Ethnicity and Foreign Status," July 10, 1995.

University of Texas at Austin memo to Alvin Meyer, Assistant Dean, College of Engineering, from Marsha Moss. "Undergraduate Student Flow by Major in the College of Engineering," October 10, 1995.

University of Texas at Austin. Student Profile 1995-1996. Basic statistics. University of Texas at Austin. Facts 1996-1997.

Virginia

Miller, M. "Assessment in the Restructured University," Virginia Assessment Group, 1995. Paper describing ways in which assessment has been incorporated into SCHEV policies and procedures.

SCHEV Student Database: Record Layouts and Data Dictionary, June 1, 1995.

SCHEV, "Chronology of Assessment Initiatives in the Commonwealth of Virginia," May 1995. Documents events and projects 1984-1995.

SCHEV, "The Measurement of Student Achievement and the Assurance of Quality in Virginia Higher Education," 1986. Senate report including background literature, institutional initiatives, and recommendations for quality assurance.

SCHEV, "Guidelines for Student Assessment," April 1987. Guidelines issued as result of Senate Resolution 125 study.

SCHEV, "Assessment Reporting," 1988. Guidelines and issues protocol for annual reporting to SCHEV, 1990-1995.

SCHEV, "Report on Student Assessment," excerpt from 1987 Virginia Plan for Higher Education. Background discussion on assessment and individual institutions' goals for reporting year.

SCHEV, "Student Assessment in Virginia: An Update," excerpt from 1989 Virginia Plan for Higher Education. Background discussion on assessment and progress commentary.

SCHEV, "The Virginia Plan for Higher Education, 1991-92." Five-year benchmark report with sections on general education, the major, remediation, out-of-class experiences, and discussion on accountability.

SCHEV, "Virginia's Public Colleges and Universities Assessments of Student Learning, 1994: A supplement to the 1993 Virginia Plan for Higher Education," 1994. Background sections and individual institutional initiatives.

SCHEV, "Guidelines for Assessment and Evaluation of Off-Campus Instruction," October 1991. Background discussion, policies and responsibilities, and assessment guidelines for off-campus credit instruction.

Joint Legislative Audit and Review Committee, "Chapter V: Promoting Effectiveness and Efficiency in the System of Higher Education," no date. Chapter profiling work of SCHEV in assessment and improved student learning.

SCHEV, "Assessment in Virginia: Guidelines for the Second Decade," April 1996. Definitions and areas to be discussed in report.

SCHEV, "Virginia Higher Education Indicators of Institutional Mission, 1995" The Virginia Plan for Higher Education. First monograph in a series, described who is served by the system.

Miller, M. "Vital Statistics: Developing State-Level Performance Indicators." Paper presented at AAHE 1995 Assessment Forum. Describes history of indicators selection.

Miller, M. "The Virginia Experience," Paper Presented at 1995 NCES Postsecondary Assessment Workshop, Arlington, VA, December 1995. Discussion of indicators to demonstrate improvement and address accountability.

SCHEV, "Action Performance Measures," May 6, 1996. Description of core measures for institutions of higher education in Virginia.

Commission on the Future of Higher Education in Virginia, 1994-96, "Making Connections: Matching Virginia Higher Education's Strengths with the Commonwealth's Needs," Report of Chichester Commission), no date.

Keating, Jean. "SCHEV Student Data Base." Paper presented at Annual Forum of the Association for Institutional Research, Chicago, May, 1993. Description of integrated data base used in Virginia to report on student progress within institutional context.

SCHEV, Student Data Base: Record Layouts and Data Dictionary. July 1996. Institution-specific report on fall headcount, annual course enrollment, financial aid, degrees conferred, and admission data files.

J.S.Reynolds Community College. "Assessment Report, 1995." Narratives and tables on general education, majors, off-campus and distance learning, dual-credit instruction; planning, evaluation, budgeting; plans for 1996 and 1997; assessment and restructuring.

J.S. Reynolds Community College, "Statistical Profiles Booklet," Vol. 1-2.

J.S. Reynolds Community College, "Corporate and Professional Development, 1996 Fall Schedule." Workforce skills assessment; computer training; short courses for business.

J. Sargeant Reynolds Community College, "Manual for Evaluating Academic Programs, Revised February 1996." Narrative on process; criteria; data collection and analysis; guidelines for reporting; curriculum committee review protocol; year-end report formats.

Roanoke College, "Statistical Profile, Fall 1995." Tables and graphs on admissions and financial aid; academic affairs; student affairs; resource development; and business affairs.

Results of the Roanoke College Spring 1995 Student Survey, by Daniel Larsen, June 1, 1995.

Enrollment Management Team Graduating Student Survey 1991-1995, by Daniel Larsen, July 25, 1995.

Hollins College. "Hollins in Perspective 1991-1995."

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